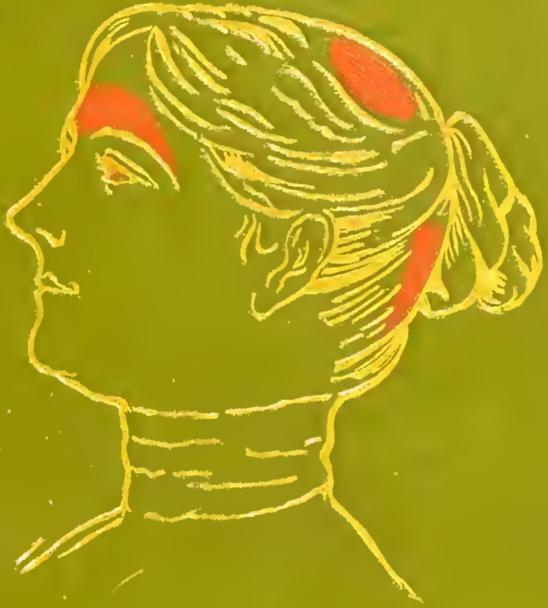
THE LOCALIZATION OF HEADACHES



AND SICK-HEADACHES.

H. BENDELACK HEWETSON.

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Localization of Headache

AND

Sick Headache,

INDICATING THEIR ORIGIN, PATHOLOGY, & TREATMENT.

BY

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To THOMAS CLIFFORD ALLBUTT,

M.A., M.D., F.R.S., F.R.C.P., LL.D., F.L.S., F.S.A.,

Regius Professor of Physic in the University of Cambridge,
Consulting Physician to the General Infirmary at Leeds,

THIS BOOK IS DEDICATED,
IN GRATEFUL RECOGNITION OF EARLY ENCOURAGEMENT AND
ASSISTANCE IN THE PURSUANCE
OF THIS PARTICULAR SUBJECT,—WHICH HAS LED,
AFTER TWENTY YEARS OF
OBSERVATION, TO THE PUBLICATION OF THESE ILLUSTRATED
CLINICAL NOTES,—AS WELL AS MANY ACTS OF
KINDNESS, RENDERED WITH A GRACE
WHICH IS ALL HIS OWN,
TO HIS ATTACHED OLD PUPIL AND COLLEAGUE,

THE AUTHOR.

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INTRODUCTION TO PART I.

It has been my intention in this paper, which was originally prepared for the Members of the Leeds and West-Riding Medico-Chirurgical Society, before whom it was read, Dec. 5th, 1884, to show that a large number of headaches accompanied by nausea or actual vomiting, with vertigo and great prostration, which come under the head of Sick Headache, in ordinary terms, are simply a series of Neurotic disturbances, and are themselves symptoms of some form of Ophthalmic disorder, usually associated with Astigmatism. It is well-known that ordinary Sick Headache is present occasionally in persons who have no defect in their vision; but from my experience I am inclined to suggest that defective vision is by far the most frequent cause of this distressing ailment, and that in the majority of cases it will be found that a complete investigation of the optical state of both eyes, under the influence of Atropine, will show that glasses are required. Out of 13 cases of Sick Headache which I have reported in the following pages, as being cured by the systematic use of glasses, 12 will be found to be Astigmatic.

H. B. H.

11, Hanover Square,
Leeds, *February* 11*th*, 1885.

INTRODUCTION TO PART II.

FOR some years now it has been suggested, by those of my medical friends who were intimately acquainted with my observations and ideas on the Localization of some forms of Headache, that I should publish my further experience, and incorporate with it a Pamphlet, entitled: "The Relation between Sick Headache and Defective Sight," issued in 1885, together with a Paper which I read before the Section of Ophthalmology, at the Annual Meeting of the British Medical Association, held in Glasgow in 1888, on "General Neuroses having an Ophthalmic Origin."

Encouraged by these suggestions, I have ventured to prepare this small volume, in the hope that it may prove useful in assisting in the diagnosis and treatment of many distressing forms of headache.

I cannot omit to mention the great interest in this subject which was evinced by my friend Dr. Milne Bramwell, late of Goole, now of London, who selected numbers of very typical cases for me to treat; Dr. Clifford Allbutt, also, when in Leeds, contributed some most important cases from his extensive practice; whilst to many others of my colleagues and medical friends, who have, by their kind and appreciative interest, largely contributed to whatever success has attended my work, I owe my best thanks.

I take this opportunity of thanking Dr. Lauder Brunton for his kindness in allowing me to make use of his valuable diagrams, illustrating the nerve channels upon which depend headaches, having their origin in disorders of the eyes and teeth, &c.

To my friends Mr. Henderson Nicol, L.D.S., and Mr. J. Main Nicol, M.R.C.S., L.D.S., my thanks are especially due, they having assisted me very materially in many cases, by their counsel and surgical aid, in the treatment of headaches having a dental origin.

I must not forget also Mr. Cunningham, the Lithographic Artist, who has, in simple, and in some instances beautiful, line-sketches from nature, given a touch of Art to my otherwise crude diagrammatic pencillings.

H. B. H.

11, HANOVER SQUARE,
LEEDS, *June*, 1897.

PART I.

CHAPTER I.

THE RELATION BETWEEN
SICK HEADACHES AND DEFECTIVE SIGHT,
CHIEFLY
ASTIGMATIC,
THEIR PATHOLOGY AND TREATMENT BY GLASSES.

IT has, within the last few years, become fully accepted by Ophthalmic Surgeons, and the Medical profession generally, that there is a close relation between many forms of Headache, and some uncorrected visual disorder. So much so, that few medical men ever treat an obstinate case of headache medicinally, without having first settled the question as to whether some kind of optical defect may not in reality be the underlying, and until the last few years, the unsuspected cause. The most usual form of headache is a frontal or occipital pain* associated with the optical defect known as Hypermetropia: the cure of which, as is now well-known, depends on the proper use of rightly selected glasses. In investigating these cases my attention was frequently drawn, sometimes quite accidentally, by a casual remark, to the fact that the sufferer from this form of headache had, in many instances, occasional attacks of sick headache, sometimes weekly, or fortnightly. I found also, that by far the greater number of persons who suffered from sick headache in association with an optical error in their eyes, were either the victims of Astigmatism in one or both eyes, or had eyes of different focus.

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* This is evidently an early attempt at the localization of headache. *Vide* Diagrams commencing page 59.

My object, therefore, is to show, not only that in *some cases* is the attack of sick headache *entirely* due to this error of refraction, whether allied with astigmatism or not; but that the vomiting, and frequently also the *intermediate dyspepsia* which occurs in persons between their attacks of sick headache arise from the same cause and are capable of correction by the same means, viz.,—the wearing of accurately adjusted Cylindrical Lenses, which correct the astigmatism as well as any general optical error which may also co-exist.

I particularly wish it to be clearly understood, I do not think *all* sick headaches come from an optical defect, for it is well known that central irritation from the ear or decayed teeth* are frequent causes as well as other more general neuroses.

But I have some patients here this evening† who have been martyrs to sick headache; who are also astigmatic, and in whom a complete cure has been effected by the use of Cylindrical Lenses; showing that when sick headache and its accompanying dyspepsia are due to reflected irritation, in a neurotic subject, from the eyes to the stomach, complete immunity from attacks of this kind may be obtained by glasses, with, as I have noticed, a very marked improvement in general cheerfulness and health. I may here observe that many persons who suffer from sick headache, are astigmatic in an abnormal though slight degree, and it is only by straining their eyes by looking long and hard at some fine object, or exercising such feats of sight-seeing as *doing* the National Gallery and the Academy in one day, or severe microscopical study, reading, and the like, that the brain is irritated sufficiently to cause an attack. One patient says, he always suffers from sick headache after watching a play; another actually brings on headache and vomiting and vertigo by doing fine sewing; a third has sick headaches only when reading for an examination; a fourth, when she was at school, not since; but all proving to be astigmatic, and completely cured by the systematic use of glasses constantly worn.

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* (*a*) *Vide* Diagram pages 99-101.
(*b*) *Vide* Diagram page 121.

† This refers to the cases shown to the meeting before which the Paper was read.

I felt curious to test the eyes of several of my medical friends, who suffered from periodic sick headache. I have done so in five instances, in all of which there exists marked astigmatism; but they (all but one) still prefer to bear their sick headaches rather than wear the necessary correction in the form of glasses, which my investigation leads me to believe would give them entire immunity, provided there was no cause of reflex irritation other than that arising from the eye.

In making the necessary examination of the eye for the selection of astigmatic glasses, I quite accidentally stumbled on the fact that patients *whose eyes had been placed under the influence of atropine entirely lost their headache and their tendency to sick headache temporarily*, *so long as the atropine was applied.*

I have found several cases of sick headache associated with very slight astigmatism, hardly to be considered abnormal; but in which there was considerable Hypermetropia. In these cases the use of a simple convex glass, which corrected the Hypermetropia, proved a complete cure for the sick headaches. This is, however, the exception; usually it is the uncorrected astigmatism which keeps up the tendency to sick headache when glasses have been previously worn.

A married woman of 38, Mrs. P., with a large family, provides me with the opportunity of giving notes of a case of sick headache, vertigo, and faintness, which I had under my observation first in 1872, and which has continued without relief from treatment until this summer, when she again came under my care in the Leeds Infirmary.

Her vision with each eye was Snellen $\frac{20}{70}$, and she required + cyl : $\frac{1}{20} \frown\!\!\!\smile + \frac{1}{36}$ to correct her defect.*

I was quite unable to arrive at any accurate conclusion as to the amount of her astigmatism without the prolonged use of atropine, the variability at each testing, after weeks of treatment, showing that her accommodation, by constantly attempting to cope with the optical defect, had become spasmodic. But her sick headaches have been gradually reduced in frequency, as the accommodation became subdued by the atropine, until at last they have disappeared, the first time for 12 years.

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* Rather than translate these old formulæ into the more modern dioptric system, I will refer the reader to a comparative scale of French inches and dioptres, printed at the end of the Volume.

A curious incident occurred since this patient came under my care. The term of occupation of her house being ended, she was obliged to seek a new residence. During the removal of her goods she forgot to put in the atropine for a whole day, and found her headache returning; but having once appreciated the relief from the pain which the drops gave her, she was thus reminded to re-apply them. This done, within the hour following her headache disappeared.

The attacks of sick headache in this case have frequently followed prolonged attention to sewing. She has worn the glasses three months during which time she has had no headache or vomiting, and she quite spontaneously volunteered the remark that her food had done her more good, and the digestion which was before impaired is now excellent.

She complained of a choking sensation and pain in the throat, as well as of headache and vomiting. This has entirely disappeared with the rest of her symptoms. Her health is now much better, and her general appearance improved. She says—to use her own words—" I have been a new woman since I commenced with the atropine drops. They entirely cured my headache and vomiting."

Notes of a case illustrative of the relief given to headache, which is associated with Nausea, by the application of atropine to paralyse the accommodation.

Miss P., aged 22, when at school and working hard, suffered from sick headache about once a week. She left school at eighteen, and was unable, on account of her constant headaches and defective vision, to pursue her studies further. Her attacks became so frequent and severe that she was supposed to have some form of Meningitis. She had no vomiting accompanying these headaches, nor had she had since she ceased to study. Music lessons always made her worse, and had to be discontinued.

She had been under medical treatment for many years. I was asked by her present medical man, Dr. Hunt, of Harrogate, to test her vision in order to make out if there was any connection between the state of her eyes and her headaches, which were now *constant*, without actual vomiting, although she often felt sick.

I tested her vision with this result, that she saw with unaided sight S $\frac{30}{70}$ and required — 2 D in the vertical axis of each eye to correct her myopia, but only 1 D in the opposite axis. To be quite sure that I was correct, I asked her to put an atropine solution, gr. 2 to the oz., into her eyes to paralyse her accommodation.

At the end of a week she called on me again, when I found that the glasses were correctly estimated, and she said, to give her own words, "*I don't feel like myself without my headache.*"

Ever since she had used the atropine drops her headache had gradually disappeared. She had been more cheerful, and had looked much less worn in the face, and was bearing herself more buoyantly. This was remarked on by all her friends, who went on to say that no medicine which she ever took had relieved her in any way. She has now worn the glasses 3 months with entire relief from her former symptoms.

Notes on Cases illustrative of the relation between Sick Headache and Astigmatism.

B. Sissons, aged 12, suffered from defective sight, with constant headache, usually occupying the frontal region, particularly when preparing his lessons at night. He regularly had an attack of vomiting with a severe headache once a week, accompanied by faintness and vertigo.

His vision varied greatly, showing great instability of the accommodation. On some days he could read $\frac{20}{40}$, on others only $\frac{20}{70}$, unassisted by glasses. I found that he had mixed astigmatism, requiring a + cylindrical glass of 1·25 D in the vertical axis of each eye, and a cylindrical glass − 2 D in the horizontal axis.

He has worn the glasses at his work for seven months and upwards, during which time he has never had an attack of sick headache, nor has he been troubled with headache of any kind. He comes home fresh from school now, whereas he used to return headachy, wearied, and overdone; and remarks also that he is never dizzy now; before he wore glasses he was constantly so.

Nurse Z., 27, a Probationer in the Leeds Infirmary, has + 1 D of Astigmatism in the horizontal axis of each eye.

She has worn correcting cylindrical lenses for two years. Previous to that she had attacks of sick headache weekly; now she enjoys complete freedom from them.

But on trying to read in a new set of cylinders the other day, before I had had an opportunity of adjusting them, an attack of sick headache came on at once, showing that the unadjusted cylinders acted really in producing astigmatism, which they always do if out of the proper correcting position.*

Notes of a case of Mixed Astigmatism causing sick headache.

Miss M—. W—., a Pupil Teacher under the Leeds School Board, the state of whose eyesight I was asked to investigate by Mr. Scattergood. I found that she had mixed astigmatism, viz., — $\frac{1}{50}$ horizontal axis + $\frac{1}{50}$ vertical axis in each eye. She complained that besides the difficulty which she had in seeing, she suffered from constant headache and vertigo. About every 14 days to 20 days she had an attack of sick headache, which she noticed followed harder reading than usual.

Since the use of the glasses, she has not had either headache or sick headache, and this improvement has taken place under the extra examination pressure now going on. The vertigo has entirely disappeared also.

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* Great advance has been made since this time in the manufacture of cylindrical lenses. Careful registration of the angle of the axis of the cylinders gets over all this difficulty.

Notes of a Case of Mixed Astigmatism, causing constant headache, nausea, dyspepsia, and faintness.

Sarah E. L., 19, was kindly sent to me by Mr. Mayo Robson, he knowing that I was investigating the connection between sick headache and astigmatism.

This person has no reading or fine sewing to do, but general domestic work and the like. She does not vomit, but complains of nausea and severe headache. The latter is almost constant, but the nausea only occurs when the headache is at its height.

She has had to return home from her work frequently with sick headache, which in this individual case means severe pain in the head and eyes, nausea and faintness, and she suffers also from another symptom which is frequently associated with sick headache, viz.: *soreness of the scalp and roots of the hair to the touch, chiefly at the top and back of the head.**

Once she was so prostrated that her parents were obliged to fetch her home in a cab, and put her to bed.

This is also a case of mixed astigmatism, + $\frac{1}{24}$ being required in one axis,—$\frac{1}{24}$ in the opposite of each eye.†

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* *Vide* Diagram, page 75.

†In this, and all other cases where the improvement in sight gained by the glasses is not recorded, it must be understood to mean that the spectacles ordered *completely* correct the defect for which they were prescribed.

The use of the atropine which was applied to paralyse the accommodation in order to arrive accurately at the state of astigmatism greatly relieved her headache. She now presents a more animated appearance, and expresses herself as being perfectly well since she wore the glasses constantly.

The next case is in the person of a busy newspaper editor, 53 years of age. He has had sick headaches all his life at varying intervals. He consulted me on account of his defective sight, which had never been corrected properly by suitable cylindrical glasses.

I found that he was suffering from compound myopic astigmatism, for the correction of which he required to use—cyl.: $\frac{1}{14} \asymp -\frac{1}{14}$. He remarked at once upon the relief experienced in looking through the glasses, which enabled him to read Snellen $\frac{20}{20}$, whereas with his unaided sight he could only see $\frac{20}{200}$. I have not had this case under observation sufficiently long to enable me to judge of the efficacy of the cylinders in reducing his attacks of sick headache, but he benefited by their use considerably at first.

For the records of the three following cases, occurring in my ophthalmic clinique at the Leeds Infirmary, I am indebted to my dresser, Mr. Nicholson.

This case illustrates the occurrence of sick headache in combination with simple Hypermetropia, and its complete cure by the use of glasses.

Miss R., aged 29, suffered from asthenopia and sick headache since childhood, with over-bearing headache when she used her eyes for fine work. I found that she had a little over 1 D of Hypermetropia.*

I ordered her to wear this power for all fine work and reading, but because she had no abnormal astigmatism I did not suggest any glasses for constant wear. She has worn these lenses in this way for nearly three months, and her weekly sick headaches have entirely ceased.

Caroline W., aged 19, housemaid, Methley Junction, nr. Leeds.—When about 12 years old this patient first noticed that her sight was bad, and at this time she began to be troubled with headaches.

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* Note the small degree causing so much pain.

Her vision grew more defective, and the headaches, accompanied by a feeling of sickness, more severe until a year ago, when her sight became very much worse, and she had attacks of sickness, vomiting all night for three or four days consecutively every fortnight. Associated with this was an aching pain over the eyes, with swelling of the face.

Three months ago Mr. Hewetson ordered her cylindrical glasses. The sick headaches and their attendant symptoms ceased, and patient is now quite well, and not even troubled with the dyspepsia to which she was also subject. The optical error was one of Compound Hypermetropic astigmatism.

This case illustrates the connection between dyspepsia, vertigo, and vomiting, and astigmatism without headache.

Thomas William Highton, an Infirmary patient. — Has always had bad sight. He had small-pox when 12 months old, and may have had an ulcer of the cornea at that time, all signs of which have disappeared except astigmatism, probably due to the corneal irregularity thus started.

Patient now complains that every three weeks, more or less, ever since he can remember, he has been troubled with vomiting. Each attack has been ushered in by a sensation of heaviness, accompanied with sleeplessness, followed by a "good vomit" lasting about five minutes or so. He has then felt better, and remained so until the next attack took place. In the Vertical axis – 3 D and in the horizontal axis + 4·5 D was required to correct the vision in each eye.

A later note runs:—Has worn his glasses for a considerable time, during which he has never felt dizzy, nor vomited. He remarks that whereas previous to his wearing glasses he had to be particularly careful as to what he ate; he can now eat with absolute impunity what once was highly indigestible.

The following are some cases which have occurred in my private practice since the reading of the paper on this subject:

Mrs. W., 31, consulted me five years ago for converging strabismus, for which I operated in the ordinary way, the deformity being quite corrected; for some reason or another she failed to call on me again to procure proper glasses. The squint was simply, as it usually is, a symptom of some optical defect.

On seeing her again I found that she had suffered from sick headaches for years, "vomiting every week, sometimes three or four days together," during which time she was utterly prostrate. Her vision was, right eye $\frac{20}{\text{nil}}$ under atropine, left the same. I found that she had a high degree of Compound Hypermetropic Astigmatism, and that the application of the atropine drops had almost entirely removed the headache; the vomiting too had ceased since their use. The glasses ordered were as follows:—for each eye $+\frac{1}{40} \overset{\frown}{\smile} + \text{cyl.} : \frac{1}{24}$.

Mr. J. A. F—, aged 38, consulted me last autumn. He had been wearing glasses of my selecting five years ago, and he tells me now that, previous to that time, he was continually having sick headaches, nausea, and vertigo, which used to be particularly severe after seeing a play, or visiting a collection of pictures. Now that he wears cylindrical correcting lenses of$-\frac{1}{40} \frown\!\!\!\!\smile -$cyl. : $\frac{1}{40}$ constantly, such attacks are unknown. This is the sixth year he has been free. From my notes I find that his vision, unaided, equalled $\frac{20}{70}$ in each eye.

Mrs. W—, Oct. 22. Had been constantly under medical treatment for severe headache, faintness and palpitation, with nausea and dyspepsia, great prostration, and a tendency to insomnia. No medicine seemed to do her any good. I was myself inclined to take the same view of her case as her previous medical advisers had taken, since she protested that her sight was "all right," but a persistence of her symptoms suggested to my mind I should test it myself; I accordingly did so, under the influence of atropine, and obtained the information that her vision was $\frac{20}{50}$ in each eye, and that there was spasm of the accommodation, increasing and masking her defect. She eventually was found to require $+ \frac{1}{40}$ cyl. in the vertical axis of each eye. This I ordered for constant wear.

From the first application of the atropine dated the commencement of the subsidence of her symptoms, which have now entirely disappeared with the constant use of glasses. A peculiar fact connected with this and one or two other similar cases is the *insomnia*—a neurotic symptom which can only arise from the sympathetic system of the brain being irritated and tormented, by the eyes attempting to correct their astigmatism :—this, I find, ceases at once, either with the use of atropine or the correcting lenses.

Mrs. B—, aged 48, consulted me two months ago, suffering from almost *constant* headache, and attacks of sick headache when the pain was at its highest, vomiting very frequently. This has gone on ever since she can remember, but if anything, she remarked, with diminished force lately.* She once had a sick headache which lasted a week following upon reading a novel until 2 o'clock in the morning. This was ten years ago.

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* NOTE.—As a rule sick headaches will be found to diminish in frequency and severity when Presbyopia has commenced, thus pointing to their frequent ophthalmic origin.

Some weeks ago she brought on a severe attack by doing some fine sewing for a bazaar! Her vision was $\frac{20}{30}$ with each eye. I tested her again in a fortnight, after using atropine drops during the interval, and found that + cyl. : $\frac{1}{60} \bigcirc + \frac{1}{30}$ was required to correct her defect. I could hardly have conceived that such a moderate defect could have caused such extreme symptoms. She rarely got a proper night's sleep, and suffered from chronic dyspepsia, having long since given up all hopes of being cured. With the fortnight's application of the atropine drops her relief commenced. She slept all night, ate more freely, and the acute painful spot on the top of her head, which was her constant companion, gave place to a dull heavy feeling. I saw her after wearing her lenses for a month, and she reported that, on the whole, she was greatly relieved, she had still some pain in the "old spot on the top of the head," which came on about once a week, but all the other symptoms had gone. She expressed herself as being a new woman, and said she could not possibly do without her glasses.

Mr. J — consulted me on the same day as the last patient, concerning the sight of his son, a boy of eleven. He could not see $\frac{20}{200}$, and had suffered from chronic headache, vertigo, and fortnightly attacks of vomiting ever since he went to school, at between two and three years of age. His optic nerves were intensely congested, as is the case generally when the Astigmatism is Hypermetropic and the headache constant. His cheeks were also flushed, and when his troubles were at their worst each fortnight, he hid his head for fear of the light.

The lenses required for the correction of his vision were $+ \frac{1}{8} \overset{\frown}{\smile} + \text{cyl.} : \frac{1}{10}$; with these he goes now regularly to school, using them for all purposes with equal benefit, with the result that he has entirely lost his headache and the rest of his symptoms. He now enjoys his school work, which previously distressed and worried him.

I was asked by Dr. Clifford Allbutt to examine Miss J. H.'s eyes, Oct. 19, in order to discover whether there was any optical reason for her constant frontal headache, vertigo, and nausea; I accordingly did so, and found her sight was defective; she read with the right eye $\frac{20}{40}$, and the left $\frac{20}{50}$. After a fortnight's use of atropine, her vision had dropped in each eye to $\frac{20}{100}$. In this case the accommodation was difficult to subdue, but in the end, after employing atropine for a fortnight more, I found that + cyl. : $\frac{1}{20}$ was required in each eye for all purposes, except reading, and that for that + $\frac{1}{36}$ needed to be added to the same cylindrical lens.

I saw Miss H— last, seven weeks from the first trial, and she reported that her headache, etc., had disappeared.

I feel that it is unnecessary further to press the connection between sick headache and abnormal conditions in the eyes, chiefly astigmatic. It would simply mean a tedious repetition of the details of cases more or less alike in that they occur in neurotic subjects, the sympathetic system of whose brains is irritated by the eye attempting to overcome its defect; this irritation and pain apparently depress the individual, and reflect their influence to the heart and stomach by the pneumogastric nerve. The dyspepsia which intervenes between the attacks of sick headache, is clearly, in some cases, a symptom of optical error, and remediable by proper treatment of the eye. The insomnia, vertigo, rising in the throat, and great irritability of temper which I have noted, are I believe to be explained in these cases in the same way. The light which fell from Dr. Clifford Allbutt, making plain the neurotic element in many forms of dyspepsia, has made me, doubtless, bolder to report these observations, which have resulted in relieving many cases so markedly. During the preparation of the early part of this book, I was told that Dr. Lauder Brunton was working out cases on somewhat the same lines; I accordingly wrote off to Dr. Brunton and asked him to send me any writings of his on the subject—a request he kindly complied with. I was able to read his interesting remarks, from the St. Bartholomew's Hospital reports, Vol. XIX., under the heading, "On the Pathology and Treatment of some forms of Headache," in conjunction with this paper, before the meeting of the Leeds and West Riding Medico-Chirurgical Society. I will quote a sentence in support of my views, which is the more interesting since our observations were made independently of each other :—he says, "But frontal "headache is not the only one which may arise "from abnormal condition of the eyes, for megrim "or sick headache is very frequently associated "with, and probably dependent on, inequality.* of "the eyes, either in the way of astigmatism, "myopia, or hypermetropia."

It must be understood that the object of my work will be attained if I have been able to show that *many* cases of sick headache, I may almost say, *most* cases, when dependent on visual disorder, are the result of the more ordinary forms of optical error, hypermetropia, or myopia, *complicated by astigmatism.* If the astigmatism be completely corrected by glasses which are *constantly* worn, my cases go to show that the bilious vomiting, headache, and chronic dyspepsia will also disappear.

I have withheld from this record many cases of astigmatism, where there has not even been the ordinary frontal headache of visual disorder, meaning only to deal with those instances in which all the patients' troubles were cured by the correction of their astigmatism. I have had also several cases of sick headache, arising from diseases of the ears, but these are only interesting, in association with the present essay, as showing how many an unsuspected cause of irritation to the brain may, in some neurotic natures, give rise to a series of the most distressing symptoms.

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* *Vide* Diagram, page 73.

CHAPTER II.

GENERAL NEUROSES HAVING AN OPHTHALMIC ORIGIN.*

It is now some years since I first observed symptoms, many and varied, occurring in neurotic persons who were also the subjects of uncorrected optically defective sight. In investigating more particularly the relationship between the various optical errors and sick headache, or simple headache, I was occasionally startled by the apparent connection between the long uncorrected disorder (with all its immediate train of nervous disorders) and general conditions of ill-health which seemed to be the direct outcome of a thus already demoralised nervous system. It is now well-established that many cases of migraine or sick headache are directly attributable to the reflected irritation of the brain from some uncorrected optical state, chiefly on the side of hypermetropia, and always in a neurotic subject.* It is also well proven that many of these cases are entirely relieved from their periodic attacks by the use of properly selected glasses; or, an age having been reached when the activity of the accommodation ceases more or less, and the eye becomes presbyopic, the severity of the headache or migraine becomes greatly modified. It is further well known that a patient, the subject of hypermetropia, is liable, according to varying circumstances, such as extent of defect and use of the eyes, to more or less constant "head pains," not necessarily associated with very obviously defective vision, or aching eyes, but *always peculiar in their position and character*, and aggravated by close application of the sight. Although I very fully published, some time ago my observations on the relations between sick headache and optical defects, and utilised what was previously discovered as to the relation between headache (broadly defined as such), and hypermetropia, I did not then feel my footing sufficiently to enable me to bring forward that which it is now my desire to show, namely, that the neuroses growing and arising from congenital optical error are more subtle in their nature, more varied in their distribution, and more demoralising to the right evolution of the nervous system than I was at first led to suppose.

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* Read in the Section of Ophthalmology at the Annual Meeting of the British Medical Association held in Glasgow, August, 1888.

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* *Vide* Diagram, page 133.

The most common forms of headache associated with that optical error known as hypermetropia are—either simply a heaviness or pain over the brows, which may or may not be combined with general headache, or very frequently a tender place on the top of the head,* making it very distressing to dress the hair—such a soreness as occurs after a lock of hair has been "slept on the wrong way," in common parlance; there is also frequently pain at the back of the head.† All these forms may be present together, or they may exist singly, but they all occasionally occur in conjunction with severe neuralgia at the back of the neck. This I have frequently noticed, and where it occurred, whether associated with the other head pains or not, it, as well as they, soon disappeared with the systematic use of accurately adapted correcting glasses. This symptom of pain at the back of the head and neck is not one which has long been associated with optical defect, but I have now seen a sufficient number of cases to show without doubt that it may be safely regarded as one of the symptoms of (frequently latent) optical error, perfectly remediable by the use of glasses, and, when such, by glasses only.

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* *Vide* Diagrams, pages 61, 65, 67, 69, 71, 95.

† Many ladies are in the habit of "letting down" their hair in order to obtain relief from these particular pains; some even go so far as to wear it short. *Vide* page 71.

Dr. Lauder Brunton wrote to me that he had seen several cases of neuralgia of the back of the neck cured by glasses.*† It would not appear to need demonstration that along with symptoms so severe and depressing to the general nervous system as are the various forms of headache; with vertigo, which is associated with astigmatism; with vomiting; with, as I have noted, palpitation, or neurotic dyspepsia between the attacks of migraine—other conditions should arise as a sequel in many constitutions. One

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[*] As a matter of fact I made the same observation to Dr. Brunton on the same day, and our letters crossed in the post.

[†] *Vide* Diagrams, pages 61, 65, 67, 69, 71.

which I particularly wish to draw attention to is insomnia. This symptom I observed in many patients who were the subjects of astigmatism. In one instance especially, where the eyes had given much trouble during the examination period of an Oxford man's life, it was pointedly remarked to me that after the astigmatic trouble was corrected by suitable glasses, with an equal amount of work, the insomnia disappeared, and the whole physical and nervous state of the gentleman improved greatly. One object of my paper will be to show what an important factor these optical errors are in, as it were, moulding during childhood and early life the nervous and constitutional state of the individual. As a proof of this I will quote cases in ladies of education and refinement, which seem to give us some sort of clue to the possible effects on the constitution of persons who conscientiously struggle through a severe scholastic career with important optical errors entirely uncorrected.

The first case was that of a lady, aged 22, whom some few years ago, I found to be the subject of compound hypermetropic astigmatism. Her health was not good, and she particularly complained of headache and general feelings of *malaise*. I corrected the astigmatism after very patient testing, since here great nervousness made it a very trying process for myself as well as the patient. There were other symptoms, such as would be ordinarily covered by the convenient but too easily accessible term hysteria, which showed themselves in subjective pains at the back of the neck, tenderness of the spine, and frequently of the skin generally. There was no apparent lesion in any important organ, but she seemed to be the possessor of a greatly demoralised nervous system, which was easily overwrought, no matter what amount of moral pluck appeared to be put forth to resist an attack. After wearing the glasses for three years constantly her whole being seemed to change, so great was the relief. All headaches and difficulty in obtaining sleep disappeared, the appetite improved, and she became more companionable at home; but there was evidently, with all this improvement, a disordered state of the nervous system not yet removed; the tenderness of the spine remained more or less, and the health was still subject to occasional and unaccountable fluctuations. I made up my mind that though the head pains had been cured by the use of glasses, yet the long struggle in pain and toil of educational work had so far damaged the nerves that some further means of cure must be attempted.

I could multiply instances in which varying degrees of this kind of nervous demoralisation occurred; but generally there is either nerve-resisting power or nervous recuperation sufficient to enable the individual to recover completely if the sight be fully corrected. I am perfectly convinced that until the sight has been corrected all other treatment would be useless. If carefully looked into, this appears to me to suggest some very important conclusions in relation to the community at large. I see children driven to do their work although suffering from defective sight, constant headache, and restless nights, which result in great exhaustion of the nervous system, disturbance of the various functions of the body, and a disinclination to innocent and beneficial child-play, all of which is with perfect ease set to rights by a correction of the optical defect which causes it. But supposing that a naturally nervous subject grows up under these conditions, the evolution of part of the nervous system is undoubtedly endowed with morbid action, as well as the formation of the character disturbed. The causes are evident; the consequences, I believe, will be found in some of the neuroses which I have endeavoured thus imperfectly to describe.

There are other conditions and pains associated with these *headaches*, in certain cases commonly attributed by the patient to disease of the eyes, since the eyes are frequently affected. I refer to the pains in and around the eyes due to carious teeth,* which not uncommonly accompany the—if I may so call them—ophthalmic neuroses. The existence of apparently quiescent carious lower molars causes invariably a point of pain in the temporal region; but the upper molars, when carious—one or all it may be—cause pain above the outer part of the eyebrow of the same side.* Decay of the incisors and canines or bicuspids, mostly quiescent in the mouth, commonly causes pain either in the eye or about the inner side of the orbit above the diseased teeth.† The extraction of the offending teeth invariably removes the local pain. These conditions were so frequently referred to diseases of the eye, that it became necessary to localize pains in the head so as to correctly diagnose their origin, and hence reach the cause.

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* I have observed that pyorrhœa alveolaris of the mouth causes severe headaches of a general character.

Since the reading of this paper I have seen a case of epilepsy occurring in a lady of 30, whose eyes were naturally highly hypermetropic, but have become the subjects of conical cornea. She. of her own accord, avoided reading, etc., as being "sure to bring on an attack."

I have also lately treated, in conjunction with my friend Dr. Atkinson, of Romaldkirk, a case of epilepsy in a lady in which the correction of mixed Astigmatism completely cured the attacks.

It so happens that in the few patients in which I have traced a connection between some error of refraction and epilepsy, I have not found that they suffered from the usual headache of Ametropia.

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* *Vide* Diagrams, pages 95, 97, 99, 101.

† *Vide* Diagram, page 103.

Part II.

Chapter III.

THE earlier part of the foregoing pages was written as far back as 1880, and published in pamphlet form in 1885. Upon making my observations public, many cases were submitted to me by my medical friends, for my opinion on them, bearing upon the question of the connection between various forms of headache and errors of refraction. By a strange good fortune, I found that in many cases the headaches—or attacks of migraine—were evidently *in no way connected with any optical error*, or *they were only partially so.* It occurred to me to map out the regions of pain in each case, both in my hospital and private practice, which came before me, in order, if possible, to be able to systematise, as it were, a code of headaches, or pains, which should be a guide at once to their cause The diagrams which accompany these pages are the outcome of my observations. I have also included a paper which I once read in Glasgow, before the Ophthalmic Section of the British Medical Association, entitled: "General Neuroses having an Ophthalmic Origin." I found that one essential factor was that the subject should be neurotic, else the most complicated error of refraction, or the worse set of teeth, failed to produce many symptoms which are, in a large series of cases, invariable. An instance of this occurred in the case of a young farmer, whom I saw by the kindness of Dr. Clifford Allbutt. He suffered from constant pain over the brows, in front of the vertex, and at the back of the head and neck. He was sleepless, dizzy, and miserable. He complained, above all, of unceasing pain in each temporal fossa, covering the points of pain, as shown in the striking attitude of the Diagram, page 97, an attitude which is very frequently assumed. Besides the regular locale of headaches, the result of an over-worked accommodation, from Hypermetropia or its compounds, or ciliary spasm, there was here another spot of peripheral irritation; and this indicates that the carious lower molar teeth were responsible for this trouble. Teeth, I may add, *quiescent*, *non-aching teeth*, which is the rule in these cases.

Sitting by his side was a bright, merry, —rather hard—but good-natured young parson, his brother, who had taken a good degree at Cambridge, and was likewise an athlete of no small reputation. I felt interested to know how he had fared, and whether he was a Hypermetrope, like his brother. On examining his eyes, I found that he had 5 D of Hypermetropia, and not too good teeth, but had never been known to have a headache, or, for that matter, toothache either. Here is a contrast which I believe it is necessary to have:—the personal factor, whatever that may be—expressed by the term neurotic, making the whole difference between a life of *bien-être* and one of misery.

The extraction of my patient's carious teeth, and the correction of his Ametropia, completely cured his head pains.

I frequently find patients wearing concave lenses, *which they have selected for themselves*,* for the assigned reason that they can see better in them, when in reality they are suffering from a state of ciliary spasm simulating myopia, being originally Hypermetropic, or even Emetropic.

I found, early on in my investigations,

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* It needs no demonstration that the selection of glasses by a patient over the counter of the spectacle-seller's shop is fraught with risks which it is unnecessary further to dilate upon. I am glad to record the fact that the leading opticians now decline to supply lenses except from an Ophthalmic Surgeon's order.

that to correct the optical errors *only*, and leave the carious teeth, frequently did very little good. The stumps keep up sufficient pain, irritation, and discomfort to cause the attacks of sick headache to recur, and, in some instances, even one bad tooth has been known to do this. It so often happens that patients do not seek advice until a "vicious circle" has been long established, and the vaso-motor system about the head has become so thoroughly demoralised that it needs the removal of all known causes of irritation in order to recover. It must not, I think, be forgotten also, that patients who have suffered long and dreary years of pain and wakefulness, with occasional, or frequent, nerve storms of migraine, cling to these headaches by a kind of auto-suggestion, as if they were part of themselves, and cannot be removed. I never see a case of this kind now—and their name is legion—without examining the eyes carefully, under the influence of Atropine, and I may here enter a protest against the attempted correction of errors of refraction, without the employment of this drug, for some days. Without it, it is impossible to be accurate, and accuracy (mathematical precision) is essential in the treatment of these cases by glasses. Examine next the teeth, and it will, I think, be readily detected, in a large number of cases, that their state is responsible for one or other of the pains represented in the diagrams.

Atropine, in occasional instances, cannot be tolerated, even in very minute doses. What is called Atropine idiosyncrasy exists Fortunately this is a rare state to find, but when it does occur the local toxic effects are very marked in the puffing up of the eyelids and adjoining parts.

I next come to a series of well-defined headaches, which are due to states of the naso-pharynx. Everyone readily recognises, from old experience, the frontal headache of a "common cold"; but much the same kind of headache is the bane of a "mouth-breather's" existence,* to whatever the blocking of his nares is due, whether to Nasal Stenosis—*per se*—Enlarged Tonsils, and Post-Nasal growths—or other causes of nasal obstruction, combined or single. All these are accompanied by a constant frontal headache, and in many cases great weakness of the accommodation, with asthenopia, particularly noticeable in school children. To relieve these headaches and disturbances of vision, it is obviously necessary to strike at the cause which lies in the state of the naso-pharynx and throat. I will here only mention that it is needful to remove the adenoid growths, enlarged tonsils, hypertrophied inferior turbinated bodies and to dilate the stenosed nostrils by operation, rendering nasal breathing perfect and complete, before such headaches and many other accompanying symptoms can be relieved.*

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* *Vide* Diagram, page 107.

In many cases which I have treated, the eyes, teeth, and naso-pharynx require attention, especially in children and young persons.

Many of the supposed cases of break-down in children and young persons, during the educational period, have a great deal more to do with the state of their eyes and naso-pharynx—and in some instances their teeth—than the over-work to which it is attributed; and I take this opportunity of insisting that *all children ought to be examined before joining their school*, in order to anticipate, in many instances, their certain future trouble and disabilities, if pushed on in class work, with latent, yet easily diagnosed, defects of either eye, ear, or naso-pharynx, throat, or teeth.

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* The whole of this subject is being dealt with in the work now in preparation, on Mouth-Breathing, etc.

At first I thought of keeping lists of cases year after year, and publishing them, with these diagrams; but I found, from the large mass of material at my disposal, that it became an endless repetition of identically concurrent causes, effects, and results.

There is nothing so satisfactory, to my mind, as to trace a headache to its origin where possible, and this done the treatment is obvious and effective.

There are many forms of headache still to be worked out. Dr. Lauder Brunton has shown us the locale of some.* He sums up the main points in his paper, written in 1880, as follows:—

"Headache is usually the product of two "factors—local irritation and general condition.

"The chief local causes are decayed teeth "and abnormalities of the eye, although diseases "of the ear and nose, inflammation of the throat, "and local irritation of the pericranium or of "the skull in rheumatism and syphilis, are not "to be forgotten. Decayed teeth may give rise "to temporal or occipital headache† when the

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* *Vide* Diagrams, pages 127, 129, 131.

† I have not found occipital pain in my cases, although I have looked carefully for it.

"molars are affected, and also I think to frontal "when the incisors are decayed.

"The chief abnormal conditions of the eye "which cause headache are strain from reading, "or working with imperfect light, or for too "long a time, myopia, hypermetropia astigmatism, "inequality of vision between the two eyes, "and last, but not least, glaucoma.*

"Besides this, I think that alterations in the "circulation and intraocular pressure are frequently "produced by bile or poisonous substances cir-"culating in the blood, and that probably also "a rheumatic condition, affecting either the eye "itself, or the muscles which move it, is a not "uncommon cause of headache. Where both "eyes are equally affected, the headache is "usually frontal; but when one eye is more "affected than the other, the headache appears "either in the form of brow ague or megrim.†

"In treating any case of headache, therefore, "the first thing to do is to see whether the "teeth are sound and the eyes normal. If "anything is found wrong with either the teeth "or the eyes, the defect should be at once

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* *Vide* Diagram, page 77.

† *Vide* Diagram, page 73.

“ corrected. The throat, ears,[*] and nose[†] should
“ also be examined to see if any source of
“ irritation is present there, and the surface of
“ the scalp tested by pressure for rheumatic or
“ syphilitic inflammation. Percussion should also
“ be tried over the head in order to determine
“ whether or not there is any intracranial tumour.

“ The locality of headache is probably
“ determined chiefly by the local source of
“ irritation, but this differs according to the
“ general condition in a way that it is at
“ present impossible to explain. Thus frontal
“ headache with constipation is usually relieved
“ by purgatives ;[‡] frontal headache without con-
“ stipation, just above the eyebrows, is relieved
“ by acids ; and a similar headache, situated
“ higher up at the commencement of the hairy
“ scalp, is relieved by alkalies.[§] Vertical headache
“ is usually associated with anæmia, and is
“ relieved by iron.[||] The more or less continuous
“ headache of syphilis is usually best relieved

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[*] *Vide* Diagram, page 121.

[†] *Vide* Diagrams, pages 107, 111, 113.

[‡] *Vide* Diagram, page 131.

[§] *Vide* Diagram, page 129.

[||] *Vide* Diagram, page 127

NOTE.—It will be observed that the locale of these pains occupy positions common to other causes.

"by iodide of potassium; but in order to gain "relief the dose must sometimes be much larger "than that usually given, and may range from "5 grs. up to 30 grs. for a dose. Smaller "quantities of iodide of potassium are usually "sufficient to cure the rheumatic headache."

Nothing can possibly be added to Dr. Lauder Brunton's writings on the pathological changes which take place in the vaso-motor system, about the head. My only claim is to have clinically observed the locale* of many forms of headache which come under observation in my special lines of practice, and to have produced diagrams which are an attempt at a systematic semeiology, readily showing at a glance, by a red patch on the head, the usual position of the headache, accompanied by a few words which connect this symptom with the observed cause. I would draw attention also to the matter of headache the result of errors of refraction. There are several factors, beyond the actual error of refraction, which predispose in the causation of pain. Employment, light, general health, must not be overlooked in the specialist's eagerness to attend to the eye; nor must it be forgotten that, broadly speaking, the *smaller degrees* of Hypermetropia and Astigmatism, or mixed Astigmatism, give by far the greatest amount of pain and discomfort, and it is very frequently a matter of no small difficulty to persuade a person, especially a lady, to have her errors of refraction corrected, for she will meet you with the argument that her "sight is so very good." It is in these slighter cases that the accommodation wrestles with its defects, and in this carrying of the ophthalmic handicap we have a prolific cause of pain. The higher degrees, though, are in some cases the cause of the worst neuroses; yet, as a rule, the eye refuses to accommodate, and its very inaction is the origin of relief. I find many patients, who have had glasses ordered for the relief of headache in cases of Ametropia, for *reading only*, partly perhaps from a want of complete conviction in this matter, also from being subtly swayed by the dislike which many have to wear glasses always.

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* My first paper in which I drew public attention to the localization of headaches, was given before the Medical Section of the British Medical Association when last at Birmingham.

The ordering of glasses for constant wear is, in my opinion, absolutely essential, in most cases, to complete the relief. Seldom is the full amount of correction required, but something short of that for reading, which, except in the very young, represents the total mathematical error, though not of course in Myopes.

Age has so much to do with the amount of Hypermetropia, which can be corrected with comfort, that I make it a rule to test these patients, after the full amount of error has been ascertained under Atropine, and again after the effects of the drug have worn off.

These remarks apply equally in cases whether complicated by Astigmatism or not, except, of course, in the case of mixed Astigmatism, when the same combination of cylindrical lenses is worn constantly for all purposes and distances.

In treating the headache due to spasm of the ciliary muscle, which causes apparent *Myopia*, though the eye be either Hypermetropic or Emmetropic; or in a myopic eye it is frequently necessary to warn the patient against tempting the spasm to return (even after the prolonged use of Atropine drops),* by over-use of the eyes, and this also applies to some cases of Hypermetropia or Hypermetropic Astigmatism, in which the constant exercise of eyes whose defects are uncorrected, has tended to produce an irritability which will make the eyes intolerant of use, whether with or without correcting lenses.

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* I have notes of two cases in which the prolonged use of Gutt. Atropiæ, gr. iv., ad aquæ ℥ i, failed entirely to overcome ciliary spasm.

Prolonged treatment by Atropine and rest, with protection from strong light,* is the only means of relief, both to the head and eyes in cases of this nature. Ciliary spasm (which I often call reader's cramp) and irritability are alike liable to return, whether the error of refraction be corrected or not, and of course the headaches accompanying those states return also.

There is one form of headache due to an error of refraction, which, unfortunately, so far as optical correction is concerned, admits of no cure, viz., that arising from irregular Astigmatism—whether augmented or acquired by accident or disease. These cases are far from uncommon, and, outside the use of drugs, appear to be most relieved by wearing somewhat tinted glasses. This blunts the general vision, but at the same time it modifies the reflex pain.

I have intentionally omitted to say much in regard to drugs, since I wanted first to emphasize the traceable relationship of cause and effect in the treatment of such forms of headache as are capable of being localized with certainty in this connection. There can, I think, be little doubt that the actual cause of the pain is vaso-motor spasm, which is at once relieved by several well-known drugs, such as Caffeine, Antipyrin, etc., and anyone who has experienced, personally, the relaxation of the spasm a few minutes after taking, say a grain of Caffeine, can readily feel and appreciate its salutary action. But grateful as many of us are for the immediate relief obtained in both ourselves and our patients by the use of these drugs, they may be aids to cure, but they are palliatives only if used alone.

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* Dark "London Smoke" Goggles' are much needed in some cases, and great relief has not infrequently attended my ordering the correcting lenses to be slightly tinted.

The Migraine, which has its origin in one or other of the causes I have indicated, may be, and is, relieved in some cases by drugs with marvellous rapidity ; but to complete, nay, to commence, the actual cure, involves striking at the cause. I have ventured to quote Dr. Lauder Brunton, who, in a concise form, has touched on and differentiated the causes and locales of several forms of headache which are not likely to fall within the range of my work. It will be noticed that in the early stages of these published observations, the term "headache" was usually applied to all these various forms, and that by slow degrees, localization, as indicated by the diagrams, has come into use. One reason was that persons rarely mentioned pain at the back or top of their head or neck, thinking that these symptoms were more matters for their general medical advisers than an ophthalmic surgeon, and never dreaming that they had anything to do with their eyes ; but by degrees I learnt to closely question patients on these various head pains, and always took a drawing on the spot, of which I have now many thousands. It is from these clinical notes and sketches that I have framed the following diagrams.

PART III.

FIFTEEN DIAGRAMS

ILLUSTRATING PAINS IN THE HEAD ARISING FROM DEFECTS OF THE EYES ONLY.

Diagram showing the pain regions about the head and eyes, in some cases of Hypermetropia, which is either not corrected, or is insufficiently assisted by spectacles.

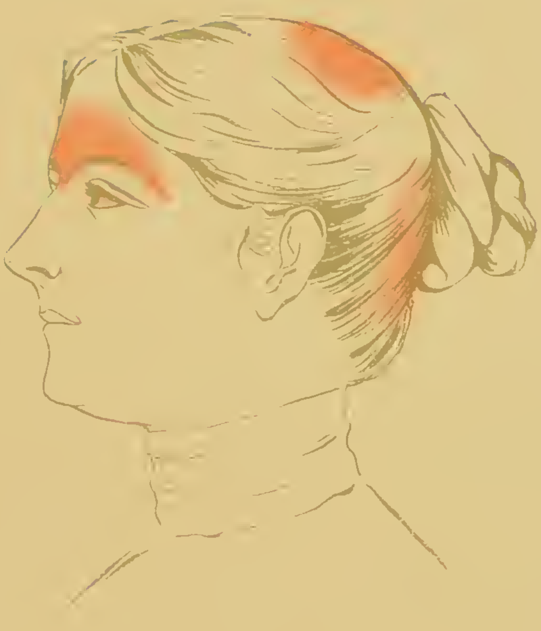
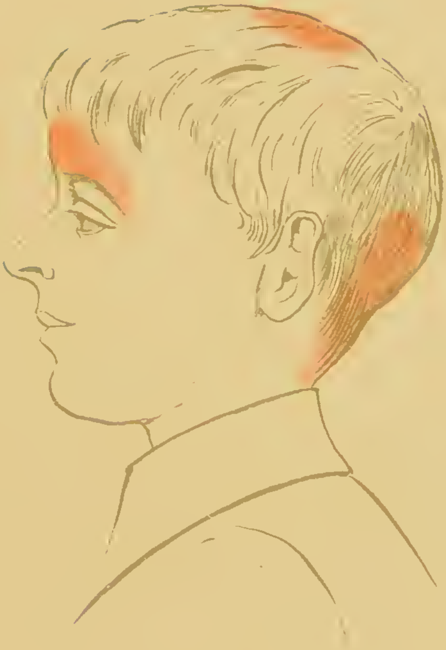


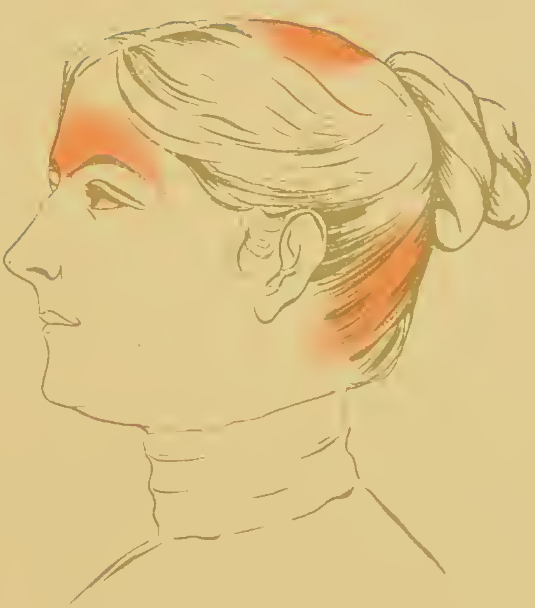
Diagram indicating the frontal headache and pain in the eyes only, present in some cases of Hypermetropia.

Pains about the head and eyes in cases of simple, or compound Hypermetropic Astigmatism occurring in school children.



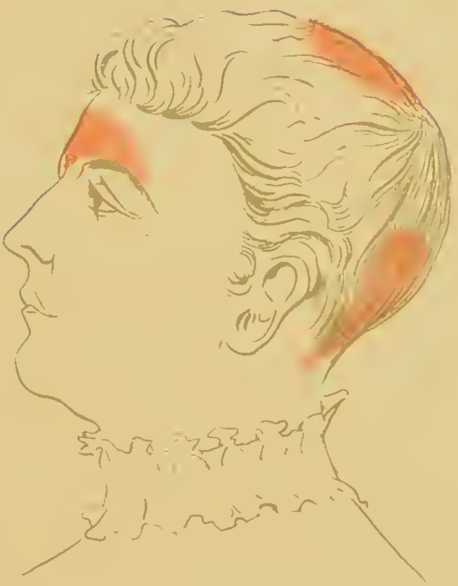
Pain at the back of the head and neck from Hypermetropia, so severe as to necessitate the dressing of the hair on the top of the head.

Diagram showing a lady's hair dressed low at the back of the head, to avoid pressure on a tender area of the scalp in front of the vertex, in cases of Hypermetropia—with or without Astigmatism.

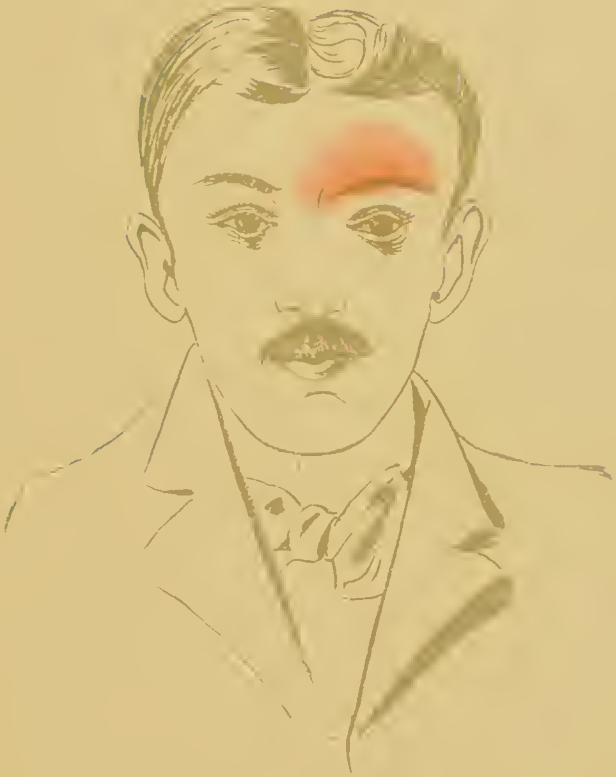


Hypermetropic Lady Student, the error of refraction in her eyes being uncorrected, has cut her hair short in order to obtain some relief from the pains indicated.

This, I take it, is the origin of the short hair, adopted by many literary ladies, who are also irreverently designated by another name.



Pain over one brow only. in cases in which the Hypermetropic error of refraction is limited to one eye ; this may also be accompanied by the usual pains at the top and back of the head, and is also associated with unilateral ciliary spasm.



Painful regions, in cases of mixed Astigmatism. These either exist together or separately, but in some the frontal pain is occasionally entirely absent.

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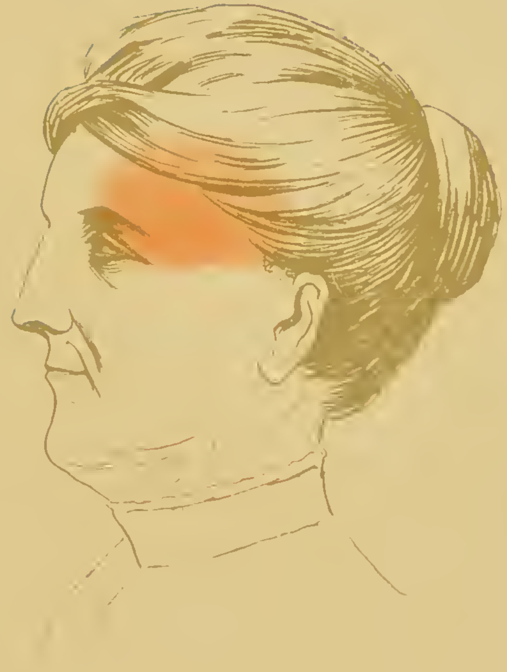
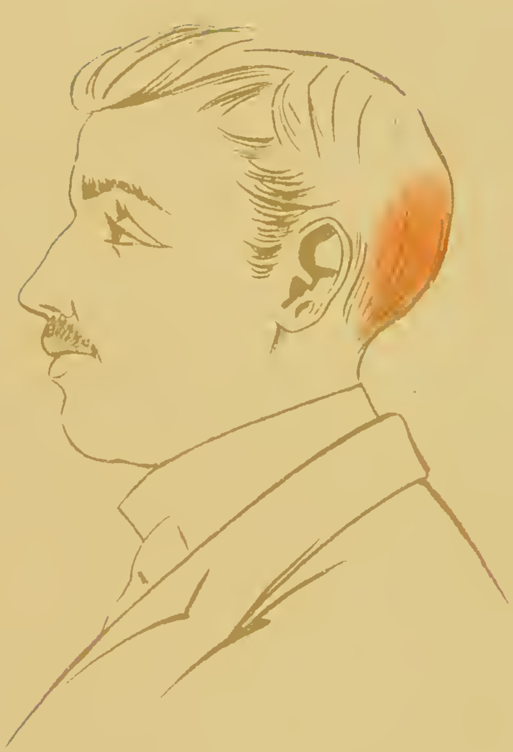
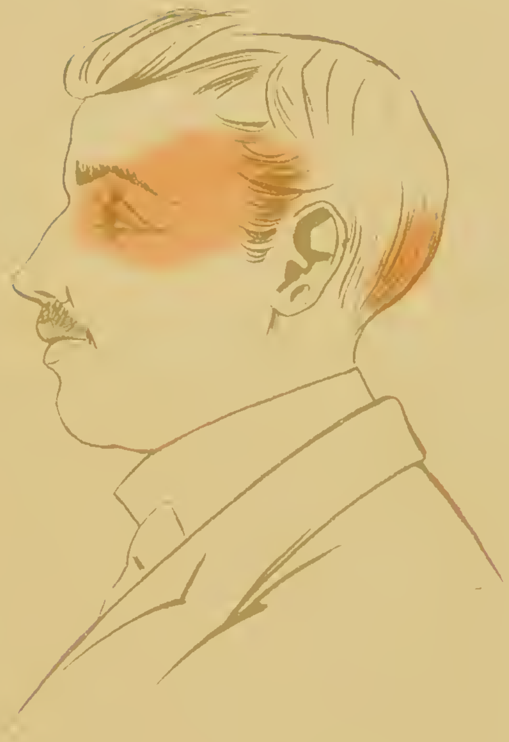
Pain in, and about the eye, an early symptom of acute Glaucoma, simulating an attack of sick-headache.



Pain at the back of the head in cases of acute interstitial abscess of the cornea.

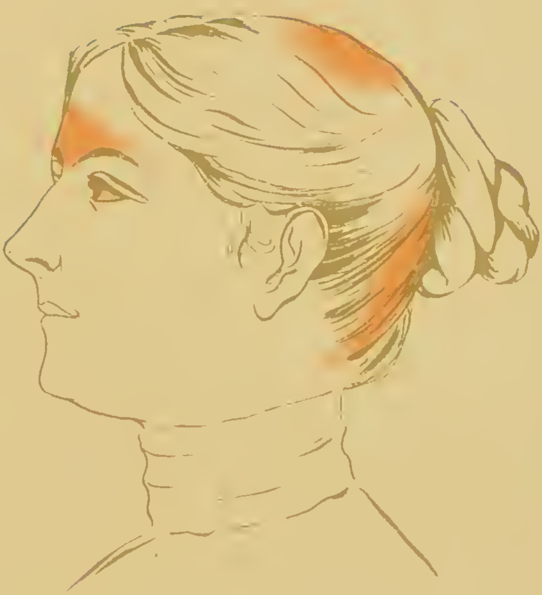


Areas of pain in the head accompanying acute Iritis.

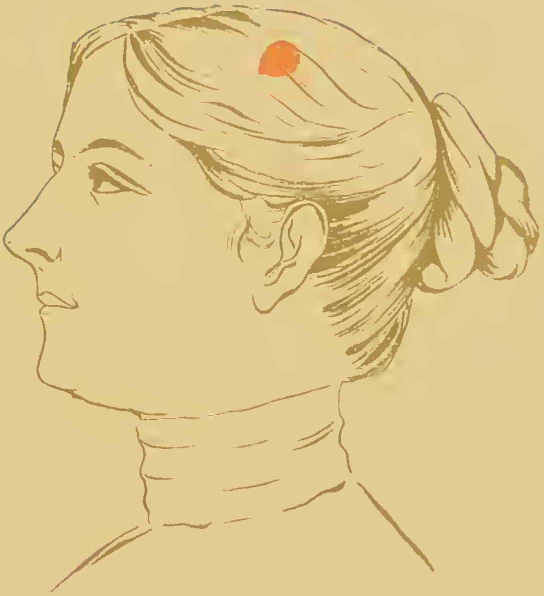


Pain in the eye, &c., accompanying spasm of the accommodation in cases of Myopia, or Myopic Astigmatism.

Pain in the eyes, &c., associated with spasm of the accommodation in subjects with Hypermetropia, Hypermetropic, or mixed Astigmatism.



Tender spot on left side of head, which frequently follows an attack of functional unilateral Hemianopsia, a form of Migraine.



Pain at the back of the head, occurring in some cases where a minute foreign body is impacted in the Cornea.

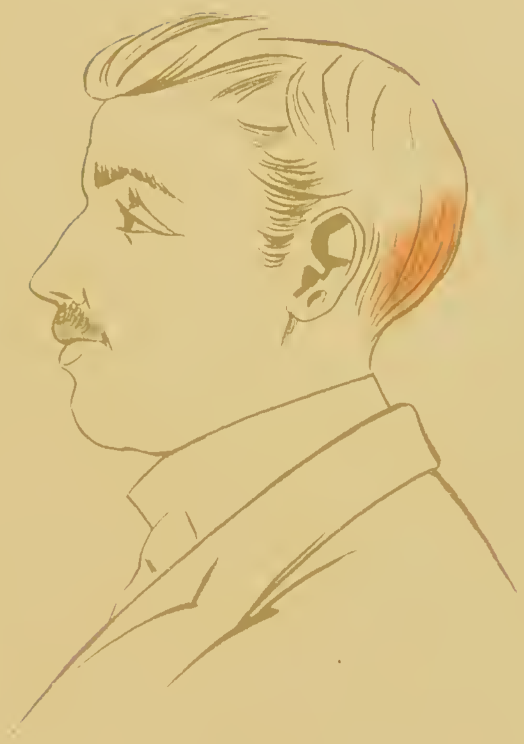
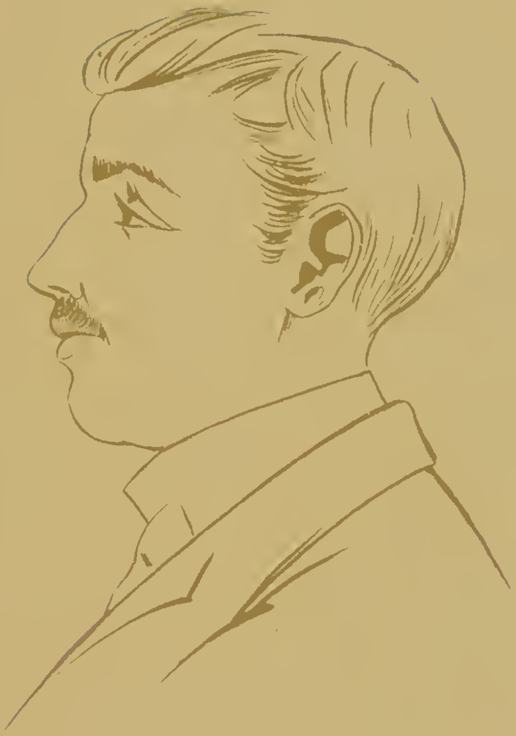


Diagram as a reminder that in some non-neurotic individuals, serious errors of refraction are unaccompanied by any pain, either in the eyes or head.

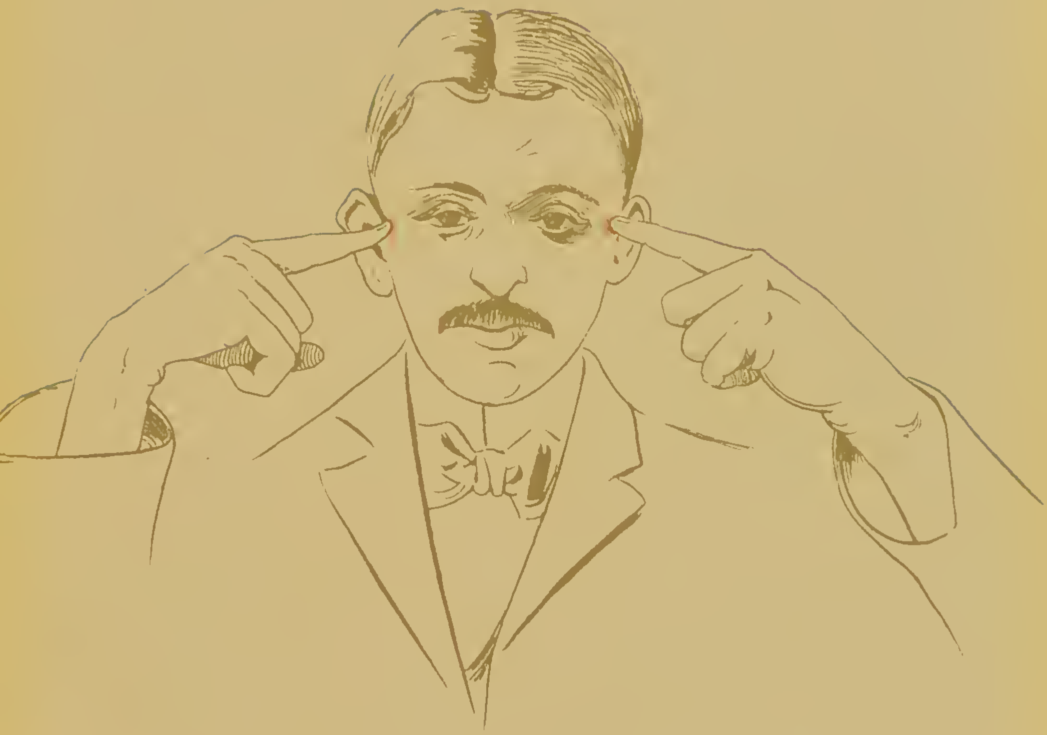
Vide page 45.



FIVE DIAGRAMS
SHOWING PAIN IN THE HEAD AND ABOUT THE EYES, ARISING FROM THE COMBINED IRRITATION OF DEFECTIVE EYES AND CARIOUS TEETH.

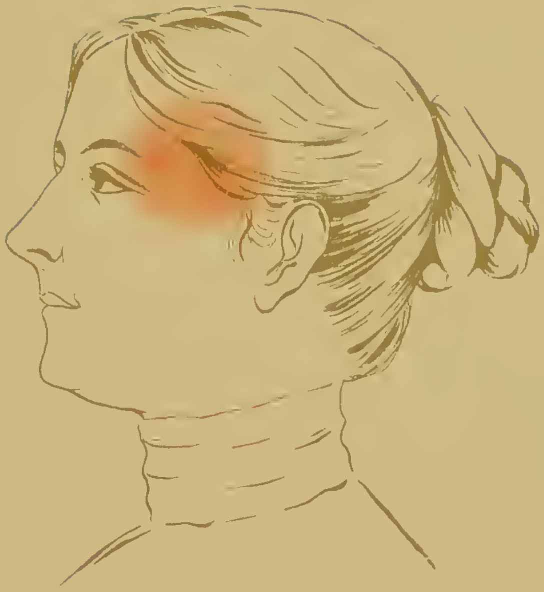
Diagram showing a circumscribed painful spot in the temporal fossa due to ***Carious lower Molar Teeth*** on the same side, in addition to the other usual painful regions associated with the various forms of Hypermetropia.

The usual attitude assumed by a patient when pointing to the tender spots in the temples, arising from Carious Molar Teeth.

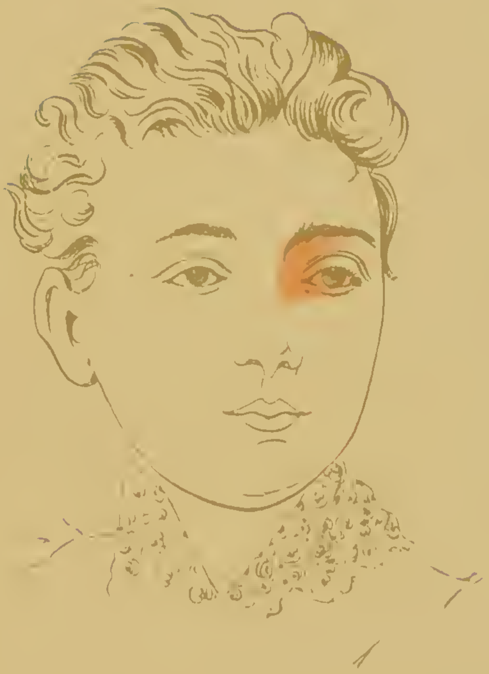


The painful spot indicative of upper Carious Molar Teeth, one or more, is situated usually just above the outer extremity of the eyebrow. The pains from errors of refraction, which may, or may not co-exist, are intentionally omitted.

Painful spots caused by Carious upper and lower Molars. This may exist on one or both sides, according to the presence or otherwise of carious teeth.



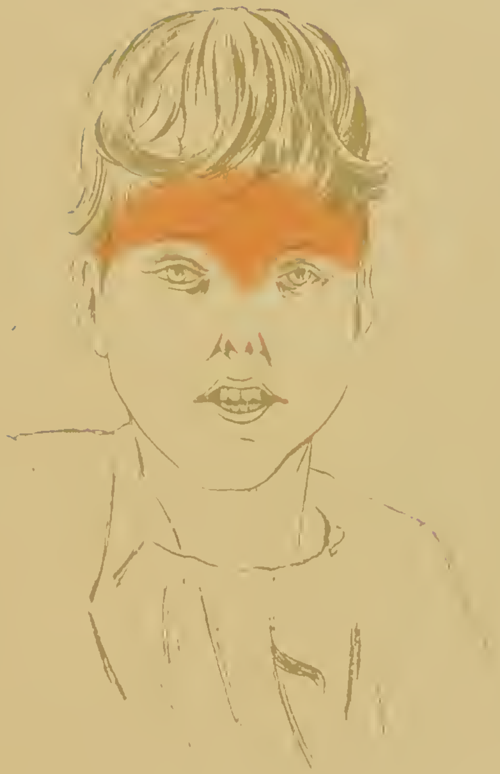
This diagram shows the painful spot caused by decayed incisor teeth, affecting the eye and inner angle of the left orbit.



SIX DIAGRAMS

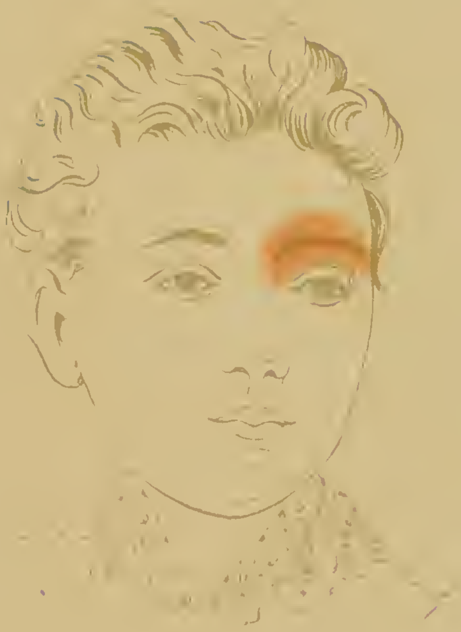
showing the connection between Disorders
in the Naso-Pharynx and
frontal sinus, and various head pains.

Mouth-breather's frontal headache, due to the various states of nasal obstruction nasal stenosis, enlargement of inferior turbinated bodies, post-nasal growths, polypi, with or without enlarged tonsils, and frequently accompanying Ozæna.

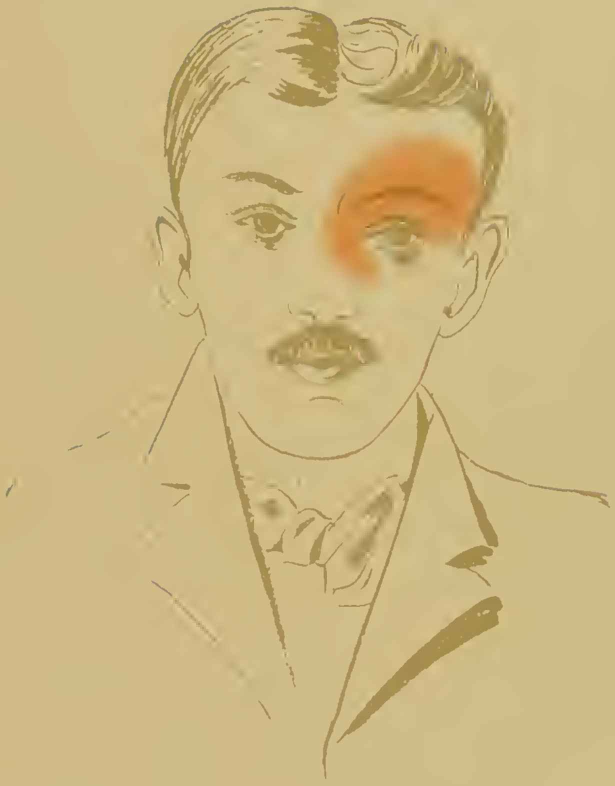


I

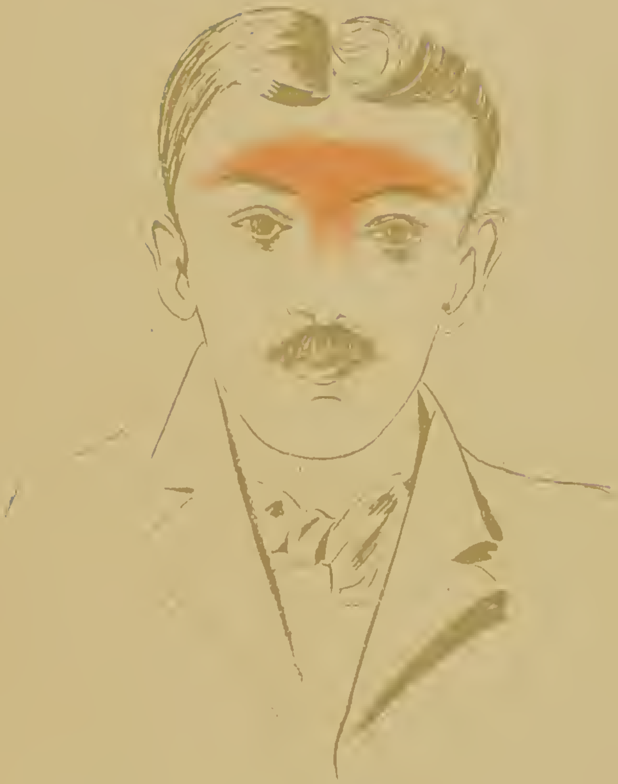
Acute pain in cases of empyæma of the frontal sinus.



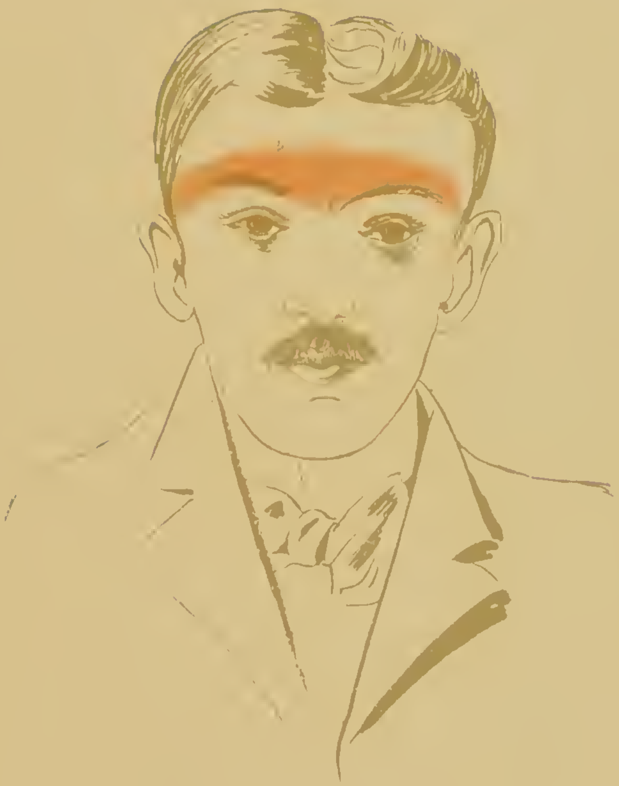
Localised pain in a case of Rhinolith in the left nostril, causing violent attacks of Migraine, which existed for 23 years. The core of the stone, which weighed 97 grains, was a piece of baby's bottle tubing. The pain entirely disappeared after its removal.



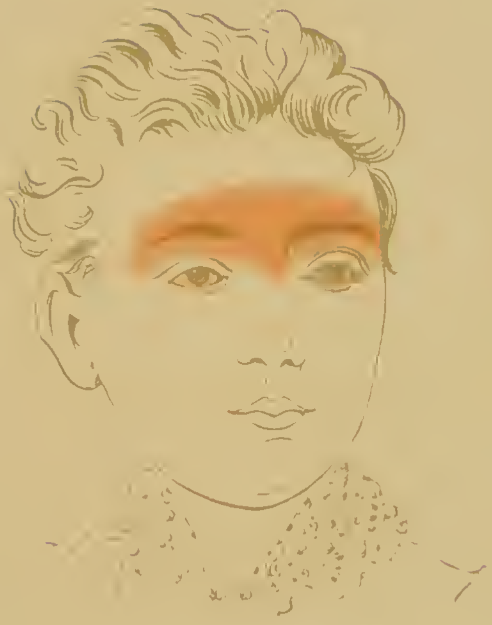
Frontal headache, which is more or less constant in some cases of Nasal Polypi. In a small proportion of instances it is entirely absent.



Frontal headache due to a "common cold."



Acute frontal headache, and orbital pain referred to the back of the eyes, with asthenopia and photophobia, accompanying an attack of Influenza

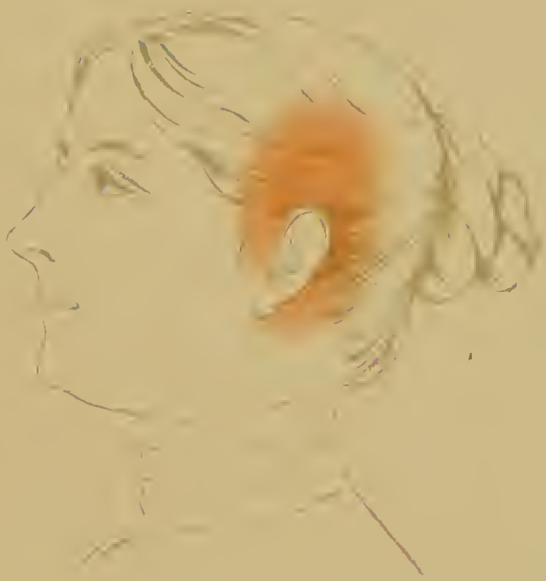


TWO DIAGRAMS

SHOWING PAINS ARISING FROM, OR REFLECTED TO THE EARS.

Headache from Wax in the Ears.

This Diagram represents a headache area which occurs in many cases in which the auditory meatus is packed tightly with cerumen, accompanied by ulceration in the bed of the obstruction. The aching disappears invariably;—sometimes at once, and *always* within a few hours of the removal of the plug. I have never seen it occur in cases of foreign body in the ear.



Earache, the result of decayed upper or lower "Wisdom Tooth," of the same side, and not the result of Otitis. This pain is referred to the deeper parts about the drum of the ear.

It will be seen from some of the foregoing diagrams that several of the forms of headache, arising from varied causes, occupy the same position, yet I have thought it wise to depict all as I have found them clinically occur. By his kind permission, and for this reason, I am reproducing Dr. Lauder Brunton's diagrams, which follow, since a double cause may in any case coexist, and must not be overlooked, else the treatment would be only partial, and the result disappointing.

I must refer the reader to Dr. Lauder Brunton's book, entitled: "Disorders of Digestion," for the treatment of the headaches indicated by his illustrations.

THE FOLLOWING ARE ADAPTATIONS
OF
DR. LAUDER BRUNTON'S ORIGINAL DIAGRAMS.

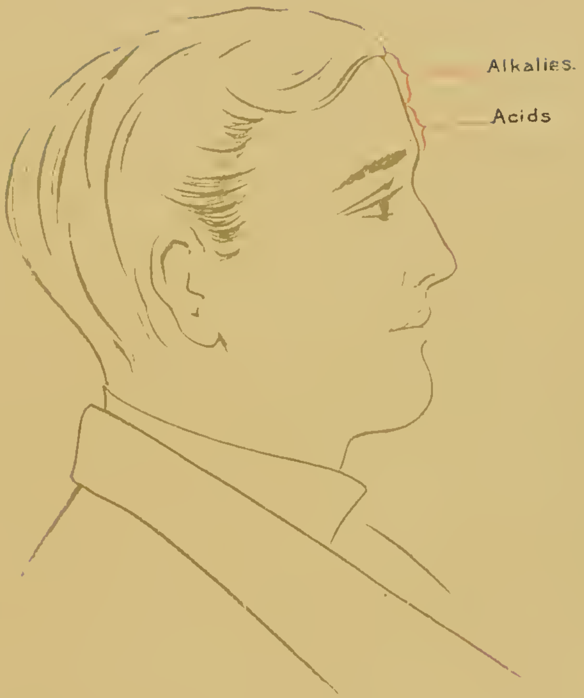
Diagram to show the position of the vertical headache of Anæmia.

This position, it will be seen, is almost identical with one of the painful spots resulting from some errors of refraction, but it can readily be distinguished from it by its being an isolated pain, not merely scalp tenderness, but vertical brain pain.

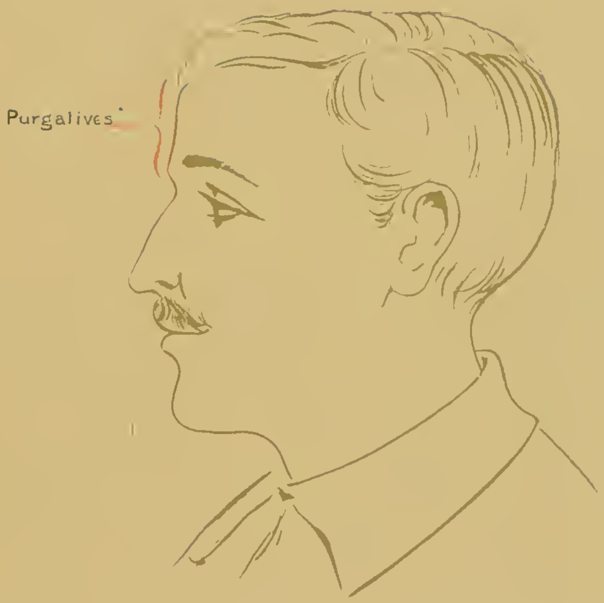
It is obvious that an Anæmic patient may also have defective eyes, in which case the pains would merge into each other at this particular spot.

"Showing the position of the frontal headache, relieved by acids and alkalies in the absence of constipation. The lower is relieved by acids, the upper by alkalies before meals. The lower one also indicates the occasional position of headache caused by straining the eyes."

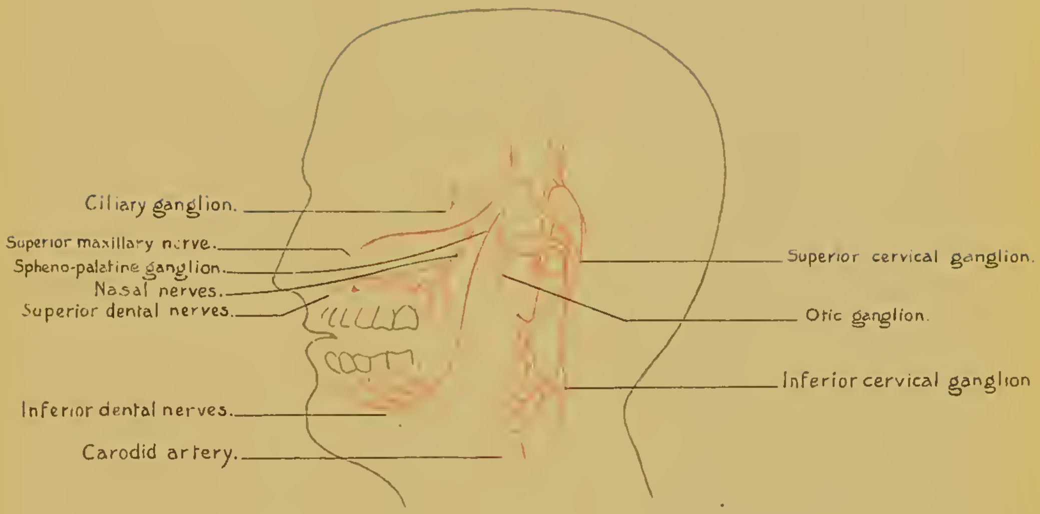
I am sure Dr. Brunton will pardon me if I substitute the word "frequent" for "occasional," as the result of my experience.


Alkalies.
Acids

"Shows the position of the frontal headache, which, in cases of constipation, is relieved by salines."


Purgatives

"A very diagramatic representation of the connection between the branches of the fifth nerve and the sympathetic system, intended to indicate the nervous channels through which irritation of the fifth nerve may affect the vessels of the head."


Ciliary ganglion.
Superior maxillary nerve.
Spheno-palatine ganglion.
Nasal nerves.
Superior dental nerves.
Inferior dental nerves.
Carodid artery.
Superior cervical ganglion.
Otic ganglion.
Inferior cervical ganglion

COMPARATIVE SCALE
OF

FRENCH INCHES	AND	DIOPTRES.
$\frac{1}{80}$	=	·5
$\frac{1}{50}$	=	·75
$\frac{1}{40}$	=	1·0
$\frac{1}{36}$	=	1·125
$\frac{1}{30}$	=	1·25
$\frac{1}{24}$	=	1·5
$\frac{1}{20}$	=	2·0
$\frac{1}{18}$	=	2·25
$\frac{1}{16}$	=	2·5
$\frac{1}{14}$	=	2·75
$\frac{1}{12}$	=	3·25
$\frac{1}{11}$	=	3·5
$\frac{1}{10}$	=	4·0
$\frac{1}{9}$	=	4·5
$\frac{1}{8}$	=	5·0
$\frac{1}{7}$	=	5·5
$\frac{1}{6}$	=	6·5
$\frac{1}{5}$	=	8·0
$\frac{1}{4\frac{1}{2}}$	=	9·0
$\frac{1}{4}$	=	10·0
$\frac{1}{3\frac{1}{2}}$	=	11·0
$\frac{1}{3}$	=	13·0
$\frac{1}{2\frac{1}{2}}$	=	16·0
$\frac{1}{2}$	=	20·0

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IN PREPARATION.

BY THE SAME AUTHOR.

MOUTH-BREATHING:

ITS CAUSES, CONSEQUENCES,

AND

TREATMENT.